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UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

FINAL EXAMINATION
OF
TSE-TSING CHU
FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

MONDAY, JANUARY 23, 1933, 3 P.M.
Room 176, Chemistry Building

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JUN 14 1933
UNIVERSITY OF ILLINOIS

COMMITTEE IN CHARGE:

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PROFESSOR DUANE T. ENGLIS
PROFESSOR P. GERALD KRUGER
PROFESSOR RALPH L. SHRINER

OUTLINE OF STUDIES

Major Subject: Chemistry (Organic)

First Minor Subject: Analytical Chemistry

Second Minor Subject: Physics

Thesis: THE STRUCTURE OF AZOXY COMPOUNDS

SUMMARY

1. The racemic and meso forms of α -p-azophenylbutyric acid have been prepared and characterized by resolution and synthesis respectively.

2. Meso α -p-azophenylbutyric acid has been oxidized to give a resolvable form of α -p-azoxyphenylbutyric acid. This has furnished a new type of evidence to confirm the unsymmetrical structure of the azoxy group.

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EDUCATIONAL CAREER

B.S., National Southeastern University, (China), 1926

M.S., University of Illinois, 1931

Fellow in Chemistry, University of Illinois, 1932-1933

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UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

FINAL EXAMINATION

OF

JOSEPH BAYLIES HALE

FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

SATURDAY, FEBRUARY 4, 1933, 9 A.M.
Room 176, Chemistry Building

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PROFESSOR CHARLES T. KNIPP
PROFESSOR THOMAS E. PHIPPS
PROFESSOR WORTH H. RODEBUSH
PROFESSOR RALPH L. SHRINER

OUTLINE OF STUDIES

Major Subject: Chemistry (Organic)

First Minor Subject: Physical Chemistry

Second Minor Subject: Physics

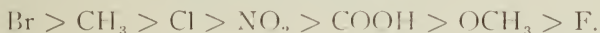
Thesis: I. STEREOCHEMISTRY OF 2, 2', 6-TRISUBSTITUTED DIPHENYLS.

II. POLYMERIZATION: (A) INTERMOLECULAR
ESTERIFICATION OF ω HYDROXY ACIDS;
(B) CONDENSATION OF MESITYLENE AND
CARBON TETRACHLORIDE

SUMMARY

1. Four trisubstituted diphenyls have been prepared and resolved. These were, -2, 2'-dicarboxy-6-nitrodiphenyl; 2, 2'-dinitro-6-carboxydiphenyl; 2-nitro-6-carboxy-2'-methyldiphenyl; and 2-methyl-6-carboxy-2'-nitrodiphenyl. The stability of the active forms under a variety of conditions was determined and compared with that of previous 2'-substituted 2-nitro-6-carboxydiphenyls.

2. A comparison of the stability of the first three diphenyls leads to the conclusion that the relative interference ability of the groups COOH , NO_2 , and CH_3 increases in the order given, though little difference is noted between the first two. The order of interference of all the groups studied thus far may be represented—



3. The three isomeric methyl, nitro, and carboxyl 2, 2', 6-trisubstituted diphenyls show marked differences in the stability of their active forms. A theoretical discussion is given of the possible explanation on the basis of various assumptions.

EDUCATIONAL CAREER

A.B., Oberlin College, 1928

Assistant in Chemistry, University of
Illinois, 1929-1932

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UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

FINAL EXAMINATION

OF

HERSEL WENDELL HUDSON

FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

FRIDAY, JANUARY 27, 1933, 3 P.M.
Room 420, Commerce Building

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UNIVERSITY OF ILLINOIS

COMMITTEE IN CHARGE:

- PROFESSOR NATHAN A. WESTON, *Chairman*
- PROFESSOR ERNEST L. BOGART
- PROFESSOR ARTHUR M. BUSWELL
- PROFESSOR PAUL D. CONVERSE
- PROFESSOR MERLIN H. HUNTER
- PROFESSOR MAX J. WASSERMAN

OUTLINE OF STUDIES

Major Subject: Economics.

Minor Subject: Business Organization and Operation.

Thesis: THE ECONOMIC EFFECTS OF QUALITY OF WATER
WITH SPECIAL REFERENCE TO SOAP CONSUMPTION
IN THE HOME

SUMMARY

Data have been collected by field survey to show the per capita soap consumption in the home with different types of water and the effect of hardness of water in increased soap costs. Costs of obtaining soft water by various methods have been determined and compared to find the relative efficiencies of those methods and the net gains obtainable in soap saved through the use of soft water.

The municipal water softener appears to be the most efficient method of obtaining soft water for most cities. Almost any city, supplied with surface water requiring filtration and containing enough mineral matter to be at all noticeable, can well afford water softening. Cities supplied with relatively hard ground water, sufficient in quantity, will find it economical to soften the water.

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EDUCATIONAL CAREER

B.S., University of Illinois, 1920

M.S., University of Illinois, 1927

Instructor in Economics, Butler University,
February, 1927-August, 1928

Assistant Professor of Economics and Marketing,
University of Denver, School of Commerce
Accounts and Finance, 1929-1930

Assistant Professor of Economics, Butler University, 1931-

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UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

FINAL EXAMINATION
OF
ERVIN CARLETON KLEIDERER
FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

THURSDAY, FEBRUARY 2, 1933, 3 P.M.
Room 176, Chemistry Building

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COMMITTEE IN CHARGE:

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PROFESSOR ARTHUR G. ANDERSON
PROFESSOR DUANE T. ENGLIS
PROFESSOR CARL S. MARVEL
PROFESSOR JOHN H. REEDY

OUTLINE OF STUDIES

Major Subject: Chemistry (Organic)

First Minor Subject: Analytical Chemistry

Second Minor Subject: Business Organization
and Operation

Thesis: THE PREPARATION AND PROPERTIES OF
2, 2', 6, 6'-FLUORINATED DIPHENYLS

SUMMARY

1. 2, 2'-Difluoro-3, 3'-dicarboxy-5, 5'-dimethyl-6, 6'-dinitrodiphenyl was prepared and resolved through the di-strychnine salt. The active forms were found to be very stable toward racemization.

2. 3, 5, 3', 5'-Tetramethyl-2, 2'-difluoro-6, 6'-diaminodiphenyl was prepared and resolved through the *d*-camphorsulfonic acid salt. The active forms were easily racemized.

3. 2, 6, 2', 6'-Tetrafluoro-3, 3'-dicarboxy-5, 5'-dichlorodiphenyl was prepared. Examination of the strychnine and morphine salts failed to show any signs of resolution.

EDUCATIONAL CAREER

B.S., University of Illinois, 1928

M.S., University of Illinois, 1930

Special Research Assistant in Chemistry,
University of Illinois, 1930-1932

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UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

FINAL EXAMINATION

OF

SHISON CHINGLIN LEE

FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

SATURDAY, MARCH 4, 1933, 9 A.M.
Room 420, Commerce Building

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JUN 14 1933

UNIVERSITY OF ILLINOIS

COMMITTEE IN CHARGE:

PROFESSOR CHARLES L. STEWART, *Chairman*

DR. DAVID KINLEY, PROFESSOR EMERITUS

PROFESSOR FREDERIC E. LEE

PROFESSOR LAURENCE J. NORTON

PROFESSOR W. RUSSELL TYLOR

PROFESSOR IVAN WRIGHT

OUTLINE OF STUDIES

Major Subject: Economics

First Minor Subject: Agricultural Economics

Second Minor Subject: Sociology

Thesis: FARM MORTGAGE CREDIT IN RELATION TO
THE TRANSFER OF FARM LANDS, WITH
SPECIAL REFERENCE TO ILLINOIS,
1910-1932

In this study of farm mortgage credit with reference to the transfer of farm lands in the United States in general and in Illinois in particular, one purpose has been to make a general examination of the principal farm mortgage credit institutions in order to investigate major aspects of their operations and evaluate the services rendered to farmers in times of prosperity and depression.

Life insurance companies have been the leading institutions operating in the field of farm mortgage financing. A tendency toward conservative loans has been prevalent among all of the farm mortgage credit agencies, particularly since 1921. Federal and joint-stock land banks have tended to close loans for periods shorter than those stipulated in the Federal Farm Loan Act. Other farm mortgage institutions in contracting new loans have made the terms longer than those specified in previous contracts.

Because of declining prices of farm products and other influences land values in Illinois dropped 58 per cent in the period, 1921-1932. Factors other than overproduction in the United States have also contributed largely to the fall of farm real estate values.

The immediate or direct helpfulness of farm mortgage loans to farmer borrowers has been enhanced when followed by advances in prices of farm products, and diminished or even converted into a distinct menace when followed by marked decline in such prices. Many sales and foreclosures of farm lands have been the result of unwise lending and borrowing.

Broad perspective is needed by both borrowers and lenders. Suggestions for remedying the present farm mortgage credit situation may include with propriety (1) the consolidation of Federal land banks and joint-stock land banks, (2) close cooperation between lenders and borrowers in improving the agricultural business during the life of the mortgage loans, (3) limitation of the term of loan to the unexpired portion of the productive life span of the borrower, a period seldom exceeding 25 years, and (4) reduction in the extent of governmental restrictions on interest rates.

EDUCATIONAL CAREER

B.A., University of Nanking, 1926

M.S., University of Illinois, 1930

Assistant chief, provincial high and normal schools, Anhwei and Kiangsu provinces, Fuyang, Süanchen and Kuanyuin, China, 1920-1926

Chief, Chinese High School, Muar, Singapore, Straits Settlements, 1926-28, and Anhwei Provincial High School, Fourth District, Süanchen, China, 1928-29

Research assistant, Agricultural Economics, Agricultural Experiment Station, University of Illinois, February, 1931-November, 1932

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UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

FINAL EXAMINATION
OF
ROBERT ASHMORE SCOTT
FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

FRIDAY, FEBRUARY 3, 1933, 3 P.M.
Room 456, Chemistry Building

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COMMITTEE IN CHARGE:

PROFESSOR WILLIAM C. ROSE, *Chairman*
PROFESSOR ERNEST E. DETURK
PROFESSOR DUANE T. ENGLIS
PROFESSOR REYNOLD C. FUSON
PROFESSOR CARL S. MARVEL

OUTLINE OF STUDIES

Major Subject: Chemistry (Physiological)

First Minor Subject: Organic Chemistry

Second Minor Subject: Agronomy

Thesis: METABOLISM OF AMINO ACIDS

SUMMARY

Feeding experiments in completely diabetic animals have been made with three amino acids, their corresponding ketonic acids, which were synthesized, and with fatty acids having one less carbon atom.

1. Norleucine and alpha-keto-caproic acid yielded some acetone bodies but no glucose, while valeric acid formed sugar but no acetone bodies.

2. Alpha-keto-beta-methyl-valeric acid and alpha-methyl-butyric acid yielded small quantities of ketone bodies but no sugar, while neither of these products were found when isoleucine was fed.

3. Isobutyric acid gave glucose, alpha-keto-isovaleric acid produced acetone bodies, whereas valine yielded no sugar and only a small amount of acetone bodies.

EDUCATIONAL CAREER

B.S., University of Illinois, 1922

M.S., University of Illinois, 1923

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THE GRADUATE SCHOOL

FINAL EXAMINATION

OF

DONALD TARVIN

FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

THURSDAY, FEBRUARY 2, 1933, 9:30 A.M.
Room 162, Chemistry Building

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UNIVERSITY OF ILLINOIS

COMMITTEE IN CHARGE:

PROFESSOR ARTHUR M. BUSWELL, *Chairman*

PROFESSOR DUANE T. ENGLIS

PROFESSOR REYNOLD C. FUSON

PROFESSOR RALPH L. SHRINER

PROFESSOR FRED W. TANNER

OUTLINE OF STUDIES

Major Subject: Chemistry (Sanitary)

First Minor Subject: Organic Chemistry

Second Minor Subject: Bacteriology

Thesis: THE METHANE FERMENTATION OF ORGANIC ACIDS

SUMMARY

A study has been made of the methane fermentation of organic acids including fatty, alpha-hydroxy, keto, and amino-acids, phenyl-substituted fatty acids and related compounds, and dextrose.

There is a complete quantitative decomposition of all of the above compounds including the ring and attendant side-chains of benzoic, phenyl acetic, hydrocinnamic, and cinnamic acids, and tyrosine. There also appears to be some decomposition of phthalic and salicylic acids and phenol.

The change in composition of gases evolved during the fermentation of dextrose and attendant phenomena observed indicate that aliphatic acids of four or more carbon atoms are first formed and later break down to carbon dioxide and methane.

Lower fatty acids appear to be the principal type of intermediate produced in the fermentations studied, but some other substances were found, such as ammonia and phenol from tyrosine, and small amounts of lactic acid from dextrose.

An alpha oxidation of fatty acids is indicated.

The following general types of reactions were observed: (1) decarboxylation, (2) deamination, (3) hydrolysis, (4) reduction, and (5) hydrolytic oxidation-reduction.

EDUCATIONAL CAREER

B.Ed., Illinois State Normal University, 1928

M.S., University of Illinois, 1930

Assistant in Chemistry, University of Illinois,
1929-1932

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